

AD-A138 432

THE BERLIN-BAGHDAD RAILWAY AS A CAUSE OF WORLD WAR I
(U) CENTER FOR NAVAL ANALYSES ALEXANDRIA VA NAVAL
STUDIES GROUP A P MALONEY JAN 84 CNA-PP-401

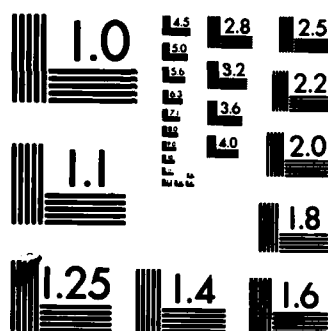
1/1

UNCLASSIFIED

F/G 5/4

NL

END



2

PROFESSIONAL PAPER 401 / January 1984

AD A138432

THE BERLIN-BAGHDAD RAILWAY AS A CAUSE OF WORLD WAR I

Arthur P. Maloney

DTIC FILE COPY

DTIC
ELECTE
MAR 01 1984
S D E



CENTER FOR NAVAL ANALYSES

This document has been approved
for public release; however, its
distribution is unlimited.

84 02 17 050

The ideas expressed in this paper are those of the author.
The paper does not necessarily represent the views of the
Center for Naval Analyses.

PROFESSIONAL PAPER 401 / January 1984

THE BERLIN-BAGHDAD RAILWAY AS A CAUSE OF WORLD WAR I

Arthur P. Maloney

Prepared at New York University, 1959



Naval Studies Group

CENTER FOR NAVAL ANALYSES

2000 North Beauregard Street, Alexandria, Virginia 22311

TABLE OF CONTENTS

	<u>Page</u>
I. Railroads and "The New Imperialism"	1
II. German-Turkish Background to the Baghdad Railway	2
III. The First Phase: A Commercial Venture, 1888-1899	6
IV. The Second Phase: Drang Nach Osten, 1899-1908	7
V. The Third Phase: The Germans Compromise, 1908-1914	9
VI. The Baghdad Railway as a Cause of World War I	10
1. Affirmative Arguments	10
2. Negative Arguments	11
3. Conclusion	13
Afterword	16
Bibliography	17

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	<i>from SO per</i>
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
<i>A-1</i>	



I. Railways and "The New Imperialism".

Shortly after the Franco-Prussian War of 1870, the European Powers, Japan, and the United States entered upon an era of unprecedented industrial and commercial expansion. One feature of this expansion was the rapid development of rail transportation to unite widely separated and, frequently, sparsely settled areas. A second aspect was the aggressive scramble for colonies, protectorates, naval bases and spheres of influence. It was discovered that railroads, in addition to opening markets and securing sources of supply, served to politically unify new territories and vastly simplified the problem of military defense and control of the region. Equally important, the railroads became the dominant business interest in the new mines and industries on either side of the railway, in the towns along the right of way, and in the farming areas for miles around the railroad. This was true both of railways in "colonial areas" and in home areas: for example, the major railways of Germany, Russia, and the United States.

Railways having become so important, it was soon merely sufficient for one nation to announce the preliminary plans for a new railway to engender suspicion, hostility, and jealousy in other powers. Such was the effect on the French of England's projected Capetown-to-Cairo Railway, which would conflict with the French-planned East-West Railway across the bulge of Africa. Similarly, the Russo-Japanese War of 1905 grew out of a struggle for control of railways in Manchuria and was precipitated, in part, by the Japanese determination to strike before the Trans-Siberian Railroad--which would considerably strengthen Russia's hold in the Far East--could be completed.

The Baghdad Railway was a project ~~as~~ grand in conception and ~~as~~ sweeping in scope ~~as any of the railways already mentioned~~. At first a modest effort in north-eastern Anatolia, it soon captured the enthusiasm of important men in German and Austrian financial, industrial, and political circles. This growing interest of Germany, by a sort of political third law of motion, engendered an equal and opposite reaction in Russia, France, and England.

In this paper I trace the history of the Baghdad Railway from its conception in 1888 to the beginning of World War I. I will show how important the Railway was in the political, economic, and diplomatic events which led up to the First World War.

II. German-Turkish Background to the Baghdad Railway

There are far too many facets to the Baghdad Railway project to be considered adequately in a short paper. Many will only be mentioned in passing. However, two factors seem of crucial importance as background to the Railway throughout the course of its development. These were: (1) the swelling flood of German economic power and her emergence as a major world trader; and (2) the disintegration of Turkish politics.

The growth of Germany as a world power is best summarized by means of a few tables of comparative statistics. These data were taken from a little book by Dr. Karl Helferich which was published on the eve of World War I [11].*

Date	Population	Europe**
	Germany (p. 14)	
1816	25,000,000	200,000,000
1871	41,000,000	300,000,000
1888	48,000,000	360,000,000
1913	66,000,000	460,000,000

In population growth, Germany's rate of increase was about that of Europe as a whole (but much greater than France's).

Steel Production, Thousands of Tons (Helferich, p. 72)

	1886	1910	Increase (%)
United States	2,600	26,000	900
Germany	950	13,000	1,300
Great Britain	2,400	6,100	150
France	430	3,400	700
Russia	240	2,300	900
Belgium	164	1,400	800

By 1910, Germany had far surpassed Great Britain in steel production; in fact, her production was greater than that of Great

* Dr. Helferich was appointed Assistant General Manager of the Anatolian Railway in 1906 at the age of 34. He was the son-in-law of Dr. Siemens--who was then head of the Deutsche Bank, the bank behind the Bagdad Railway. Helferich became director of the bank and was later Germany's Finance Minister during part of World War I. The book he wrote in 1914 was part of a nation-wide celebration at every level--social, political, economic--of the 25th anniversary of Kaiser Wilhelm II's accession to power. It provides a glimpse of how Germans viewed themselves and the world in 1914.

** Encyclopaedia Britannica.

Britain, Russia, and France combined. Yet Germany's population was still (in 1910) only one eighth that of Europe.

Total Import-Export Trade, Millions of Marks (Helferich, p. 73)

	<u>1887</u>	<u>1912</u>	<u>Increase (percent)</u>
Germany	6,200	20,000	220
England	11,000	22,000	100
United States	5,800	16,000	170
France	5,900	12,000	100

By 1912, Germany's visible trade had increased from one half that of England's in 1887 to almost equal that of England in 1912--despite a doubling of English trade in this period.

Shipping (Helferich, p. 77)

(Steam Ships)

	<u>Date</u>	<u>Number</u>	<u>1,000 registered tons</u>
Germany	1885	700	400
	1911	2,000	2,500
England	1885	7,000	4,000
	1911	12,000	11,000
United States	1885	5,000	1,400
	1911	10,000	2,500
Norway	1885	700	200
	1911	1,800	900
France	1885	900	500
	1911	1,800	800

Here, the increase in German economic wealth again is marked. Despite lack of extensive coastal trade, by 1910, she had reached parity with the United States in registered tonnage of steam ships and had one fourth the tonnage of Britain--versus one tenth in 1887. By 1910, Germany had three times the carrying capacity of France or Norway--whereas in 1887, she was only equal to these countries.

The table also shows that the German ships were larger on the average than those of her competitors. This reflects the relatively greater importance to the Germans of world versus local trade.

Hoffman [14] documents the British reaction to the German trade increase by citations of the despairing cries of innumerable British consular reports. German traders were more energetic and were much better supported by their home government and by their home banks than were the British. Taylor [5], writing during World War II, sees in all this an unholy alliance of government, industry, and labor, artificially maintained, aggressive, selfish, ruthless. Helferich, in his preface to his little book, sees the 25 years in Germany prior to World War I as a bursting forward of a whole people unparalleled since the Reformation and the Renaissance [11, p. 4]. Certainly, a new colossus had arisen in the middle of Europe and certainly this new colossus would be expected to press for expanded world trade and world power. Helferich himself, writing in Die Deutsche Turken Politik (p. 8), said; "it was neither accident nor deliberate purpose, as much as it was the course of German economic development which led Germany to take an active interest in Turkey." (As quoted in Earle [7, p. 52]).

In contrast to Germany's growth in power and unity, Turkey during this period became weaker, and her sovereignty was steadily compromised. In 1875, Turkey was forced to repudiate her debts to the European powers. In 1876, the liberal group in Turkey was able to force a constitution on its own carefully chosen Sultan, Murad V. However, Murad went insane within the year, and Abdul Hamid II came to power. Abdul pretended to accept the constitution, but the 1877-1878 War with Russia gave him an excuse to dissolve the newly formed National Assembly. This step was followed by the arrest or exiling of the liberals and the de facto suspension of the constitution. At the end of the War with Russia Britain supported Turkey at the Congress of Berlin and picked up Cyprus as a reward. Abdul Hamid then embarked on a series of economic and military reforms. These paid off in the defeat of Greece in an 1897 War. However, they were of no avail in protecting far-off Tripoli, which fell to Italy in 1911.

In 1912, the first Balkan War stripped Turkey of territory closer to home--including the important city of Adrianople. But Adrianople was regained in the second Balkan War of 1913, directed against Bulgaria by the other Balkan powers and by Turkey (a last-minute entry).

Domestically, Abdul Hamid's rule was characterized by extensive graft and corruption, a vast political police organization, a huge and slow-moving bureaucracy, and a series of insurrections of minority groups. Yalman [29] who grew up in the Salonika which sheltered Mustafa Kemal and other Young Turks, describes the long stream of exiles that passed through Salonika on their way to the capitals of Europe, the

unrest, the ferment of excitement*, the clandestine newspapers (of one of which he was the editor). In 1908, the Young Turks were strong enough to force a constitutional government on Abdul Hamid. The Sultan's attempted counter-revolution of April, 1909 failed, and Abdul Hamid was deposed. Mohammed V, Abdul's brother, became the Sultan.

Although the Young Turks were fired with the liberal ideas of Europe, they had no better solution to the nationalities problem than to continue to hold down the subject peoples by force. This policy was to give way to the idea of a nation-state only in the 1920s under Mustafa Kemal.

In economic affairs, the repudiation of the Turkish public debt in 1875 led to an ineffective consortium of European Powers in 1876 which lasted until 1881. In that year, the Ottoman Public Debt Administration (P.D.A.) was set up. By assigning to the P.D.A. certain Turkish state revenues, it was possible to begin to pay Turkey's creditors in a systematic fashion. This restored Turkish credit, and a series of loans were made to Turkey under the protecting aegis of the P.D.A. As expenses mounted, so did the role of the P.D.A. Turkey was slowly being mortgaged to the European Powers (Earle, [7]).

By the twentieth century, the P.D.A. had assigned to it one fourth of the state revenues (Blaisdell, [21], p. 150). These assigned revenues were the most readily expandable and the easiest to collect--for example, customs duties (Blaisdell, [21], p. 151). By the control of the tax rates in these areas, the P.D.A. could, and did, control Turkish capital expenditures. For example, French-British delegates to the P.D.A. blocked an increase in customs revenues in 1911 to prevent Turkey from acquiring the capital needed to build certain sections of the Baghdad Railway (Blaisdell, [21], p. 224). Finally, the P.D.A., because of the interlocking directorships with the Ottoman Bank (French-dominated) and the Deutsche Bank (backers of the Baghdad Railway) and the various European-controlled railways, harbor facilities, and industries, assumed a dominating role in the Turkish economy--as is well documented by Blaisdell [21]. The P.D.A. thus became extremely important in the history of the Baghdad Railway.

* Innumerable writers sprang up to criticize the regime. One of the most popular, Teufik Fikret, wrote a poem titled "What's The Use" in which he recounted an imaginary dialogue with a political favorite. "What is the use," said the favorite, "of having schools, books, hospitals, and factories which have only an impermanent existence in a temporal world?" To which the poet answered, "And what is the use of having your state and all its worldly riches as long as they mean only darkness, slavery, misery, and humiliation for us?"

III. The First Phase: A Commercial Venture, 1888-1899

As early as 1835, Molke, who had served as military advisor in Turkey, suggested German development of the area. Subsequently, in 1871, von Pressel made certain surveys which impressed the Turkish Government, and a short railway was built. It was not, however, until 1888 that the Baghdad project can be said to have begun. In that year, Dr. Siemens' Deutsche Bank founded the Anatolian Railway Company. The new company took over an existing British line and began to extend it into southern Anatolia. Included in the concession was an agreement by the Anatolian Railway to consider extension to Baghdad at some subsequent date. Bismarck opposed this extension provision but was overruled.

There was virtually no opposition to the railway on the part of other European powers at this time. Wolf [9, p. 17], reports a small skirmish in December, 1892, when Sir Clare Ford, British Ambassador to Constantinople, raised objections to the German concession. Marschall von Biederstein, then German Foreign Minister, countered by having the German Consul General in Egypt withhold his consent to further British advances in Egypt. Lord Cormmer, the British chief in Egypt, protested vigorously and urged the British Foreign Office to reconsider the Railway project. Two days later, Lord Rosebury withdrew the British objections.

With a few exceptions like this, the Railway was a quiet commercial venture during these years. The Germans ran their railways effectively and honestly, and the Turkish Government was very favorably impressed.

IV. The Second Phase: Drang Nach Osten, 1899-1908.

In 1897, the Turks had won a war with Greece in which the German railways had been a material factor in their success. This, more than the much publicized second visit of the Kaiser to Constantinople, induced the Sultan to push for continuation of the railway project. This facet of the railway is carefully documented by Wolf [9, p. 19 et seq.] and is his most important contribution to the history of the Railway, as Chapman [6] correctly points out in her bibliography.

On November 27, 1899, the Germans were given a definite concession to extend the railway to Baghdad. Included in the concession were guarantees of a certain revenue per kilometer of track laid--the so-called Kilometer Guarantees--and carefully worded provisions spelling out German rights to establish and operate irrigation projects, harbors, and various industries along the right of way. To back up the Kilometer Guarantees, certain state revenues in certain districts of Turkey were assigned to the railway.

The proposed route was from Haidar Pasha (the Asiatic side of Constantinople) through Angora, Adana, Mosul, Aleppo, Baghdad, and on to Basra and the Persian Gulf. There were two immediate reactions to this proposal. First, the Russians objected to the line going through Angora as being a potential threat to her interests in eastern Anatolia. By the Black Sea Basin Agreement of 1899, the route was shifted westward so that it would pass through Konia instead of Angora, and Russia withdrew her objections. Second, the British, fearing the possibility of a German naval base on the Persian Gulf, made a protectorate out of Kuwait by agreement with the Sheik of Kuwait (1899). This effectively barred the Railway from a southern terminus on the Gulf. The result was that Basra, on the Shatt-al-Arab (the confluence of the Tigris and the Euphrates Rivers) 60 miles north of the Gulf, became the proposed terminus. The line as projected, therefore, ran from Constantinople to Basra--a distance of 2,500 miles. This was a project of greater magnitude than the Santa Fe from Chicago to Los Angeles, or the Union Pacific from Omaha to San Francisco (Earle, [7], p. 75).

The Railway offered the Turks definite advantages over lines proposed by other European Powers. The main factor was that the line would tie together Turkey's scattered provinces. This was not true of lines ending at the Mediterranean below Anatolia. Such lines tended to detach Turkish territory. A second advantage was that the line went through the Taurus Mountains of western Anatolia rather than along the sea coast. This meant the Railway was safe from interdiction by European naval guns in time of war. A third advantage was that the Germans, unlike the other European powers, were not likely to attempt annexation of territory served by the Railway.

Despite the bellicose tone of the Pan-Germanic League and the Kaiser himself, despite the slogans of "mittel Europa" and "Drang nach

osten," the Railway project was received rather calmly by the British and French press. In fact, on November 30, 1889, the London Times said: "There is no Power into whose hands Englishmen would more gladly see the enterprise fall than Germany's." (As quoted in the Edinburg review of 1907, [31]). At the same time, "less cordial sentiments were expressed toward Russia and France" (Earle, [7], p. 67).

From 1899 to 1902, nothing much happened. The British were exercised over the 1900 German naval expansion, but the Railway was not part of this clamor. In the meanwhile, the Germans were quietly surveying the route and trying to estimate its cost. After a period of renegotiation with the Sultan over financial terms, a "final" concession to the German company was announced on March 18, 1902. Shortage of money led the Germans to offer shares in the Railway to France and Britain as a means of helping to float loans in these countries. Sir Nicolas O'Connor, British Ambassador to Constantinople, was in favor of this "internationalization" (Gwinner, [36]), as were the British Foreign Minister and the Prime Minister.

However, a tremendous outcry was raised against the project in the British press. Chapman [6, p. 208] agrees with Hoffman [14] that this outcry was led by special interests--such as the Lynch Brothers' shipping concession on the Euphrates--which capitalized on the wave of anti-German feeling then sweeping the country. In any event, all authorities agree that public pressure helped the British Government to repudiate internationalization. Hoffman [14, p. 147] feels that British banking interests had changed their minds about the finances of the concession, while Chapman [6, p. 208] points out that the German guarantee of equity in freight rates was never clearly brought before the British public.

Though the press uproar subsided and was never again as violent on the Railway issue, the British and French Governments continued to obstruct the Railway. In addition to blocking Germany from access to the British or French securities market, Britain put pressure on the Turks to slow down the Railway. In cooperation with the French, England worked through the Ottoman Public Debt Administration to block Turkish increases in tariffs which would be used to finance the Railway (Blaisdell, [21], op. cit.). Finally, when Germany asked for a conference with Britain, the English countered by requiring French and Russian participation. The Germans, fearing to be outvoted, refused. England then made prior agreements of Germany with France and Russia a sine qua non for negotiations with England (Chapman, [6], p. 208).

Taken all together, these policies of France and England (and, to a certain extent, Russia) constituted a most determined and consistent opposition. Yet, Sarolea [15, p. 249] and Fraser [34], writing in 1912, derided German talk of Entente opposition to the Railway! This type of journalism could not and did not contribute to a better international atmosphere.

V. The Third Phase: The Germans Compromise, 1908-1914

The British had warned the Russians during the Reval negotiations that they could not permanently obstruct the Railway (Brandenburg, [12]). In 1908, the Germans compromised, and turned the Baghdad-to-Basra section of the Railway concession back to Turkey. ("The dream of the German Baghdad Railway is dreamed away" wrote one of the directors--Benns, [1, p. 77]). This concession removed the grounds for the chief British objection, yet it was with Russia, at Potsdam in 1910, that the first agreement with an Entente power was made. Russia's Persian sphere of influence was recognized. More delays followed. Despite British fears of a German-Russian rapprochement (Mosely, [30], makes it clear that even after 1910 the Germans still had room for maneuvers against the solidarity of the Entente.), it was not Britain, but France who made the next agreement, in February, 1914. (France got northern Anatolia and Syria as spheres of influence, the Deutsche Bank and the French-dominated Ottoman Bank came to terms, and the German sphere of influence around her railway in Anatolia was recognized.)

Finally, on June 15, 1914, the British initialed an agreement which hinged on still further agreements of the British and the Germans with Turkey. The agreement involved recognition of the German railway monopoly in most parts of Turkey, a stoppage of the railway at Basra, British control south of Basra, the allowance of an increase in Turkish customs, German monopoly around Adana, British monopoly in Mesopotamia, and making the Shatt-al-Arab an open body of water (Chapman, [6], p. 206-7). There is no doubt (Earle, [7]) that Britain got the best of this arrangement. In addition, she had so delayed construction of the Railway as to seriously hinder Turkish troop movements during the war. In return for these "tactical" advantages, Britain had contributed to German fears of encirclement and had strengthened the system of alliances which helped make World War I a terribly costly and protracted struggle.

VI. The Baghdad Railway as a Cause of World War I

Affirmative Arguments

The strongest case for the Baghdad Railway as a cause of World War I is put by Bennis [1, p. 78]: "Although before the outbreak of the War in 1914, understandings were thus eventually reached regarding the Baghdad Railway by Germany, Russia, France, and Great Britain, the project had already done much to poison the international atmosphere. Germany had come to believe that the opposition of the Entente Powers was only part of their general policy of encirclement....Russia, Great Britain, and France had become deeply suspicious of Germany's plans in the Near East....Russia's realization that the Austro-German advance into the Balkans and Turkey must be checked if her own plans for securing control of the Straits at Constantinople were not to be thwarted had much to do with the course of events during the fateful days of July, 1914."

This statement by Bennis seems rather strong. It is not backed up by the references he cites* specific to the Baghdad Railway, but apparently is based on a general appraisal of the diplomatic chess game prior to World War I.

A more moderate argument is presented by Hoffman [14] who views the Railway from the standpoint of its influence on British trade in the Ottoman Empire and in Persia. He makes a convincing case for the Railway as an integral part of an all-out German assault on English trade in the area. He cites (p. 159-161) a very early British reaction--the September 21, 1899 "Curzon Dispatch." In this dispatch, the Indian Government voiced its alarm over German penetration into Persia and urged conciliation over the Persian issue with Russia so that the two powers could jointly repel the Germans. This line of reasoning led, according to Hoffman, to the Reval Agreement with Russia of 1907. For 1909, Hoffman (p. 166) cites Sir Charles Hardwage's message to the British Ambassador in Berlin: "If we and the Russians present a solid front and cooperate very closely in Persia, I think we shall in the end defeat the Germans as we are the two powers who are in a position to exert the most pressure."

British fears of discriminatory rates on the Baghdad Railway are cited many times by Hoffman. For example (p. 153), Sir Edward Grey to the German Ambassador in London in 1908: "It is impossible to agree to an increase in customs duties unless we have additional safeguards against the use of these additional revenues for the purpose of displacing British trade in Mesopotamia. We feel that we must either

* Earle himself [7] does not argue much one way or the other on the link between the Railway and World War I. He is more interested in it as a case history of imperialism.

have a part in the Baghdad Railway itself, or else we must have a concession by which we could trade in Mesopotamia on equal terms" (Brit. Doc. VI, 373-378). And again on May 26, 1911, Sir Edward Grey to the Imperial Defense Committee (Hoffman, p. 155) "We cannot agree to a tariff increase that will be used to build a railway which will be used to discriminate against our goods. We cannot, either, permit compromise with our strategic position on the Persian Gulf."

The strategic menace to Britain was the theme of the 1903 hue and cry in the British press against the Baghdad Railway. This is also the theme of Fraser's 1911 and 1912 articles [33, and 34] and Geraud's 1914 article [35]. Most of these writers were concerned with the idea of a Persian Gulf naval base being athwart England's life line to India, or of a Turkish attack on Egypt. Fraser [33] also saw, as early as 1911, that the Railway from Germany to Turkey would enable Germany to block the Dardanelles and cut British-Russian communications in wartime. This was a rare reaction. The fear of Germany's military domination of Turkey was fairly general, however, especially in 1903 when Dr. Paul von Rohrback published in his Die Baghdadbahn:

"A direct attack upon England across the North Sea is out of the question....The prospect of a German invasion of England is a fantastic dream....England can be attacked in only one place: Egypt....Turkey, however, can never dream of recovering Egypt until she is mistress of a developed railway system through Asia Minor and Syria, and until through the progress of the Anatolian Railway to Baghdad, she is in a position to withstand an attack by England upon Mesopotamia....The policy of protecting Turkey, which is now pursued by Germany, has no other object but the desire to effect an insurance against the danger of a war with England." (Rohrback's italics; cited in Lynch, [38], p. 380).

The counter reactions of the British press were violent. These statements are supposed by some writers to have aggravated Anglo-German misunderstanding and so helped bring on the War.

A final argument is that of Wolf [9]. He sees the Baghdad Railway as an important source of friction between Germany and the Entente (p. 102) but believes the Railway was mainly "Germany's pawn in the Entente-making game which failed to stave off the war" (Preface). He is not too impressed with the trade arguments--such as those developed by Hoffman and Earle. As he points out (p. 103), although Earle's figures show a vast percentage increase in German trade with Turkey, Earle does not mention that this trade was only a small fraction of Germany's total trade.

Negative Arguments

Mrs. Chapman's book [6] is the most recent study devoted to the Baghdad Railway. She is a most forthright disbeliever in the Railway as

a cause of World War I. Whereas Benns emphasizes Great Power squabbles over the Railway going on right up to the war, Mrs. Chapman sees the Railway as "one of the few subjects on which Anglo-German agreement was obtained." The fact that the conflict was being settled in the very years when international tensions were so great and that "the agreements were initialed when the War broke out is probably the best proof that the Baghdad Railway was at most a minor contributing irritant in Anglo-German relations prior to 1914" (p. 210-211). She does not believe that the war could have been advanced or stopped a single day by any British action with regard to the Railway. As to the press reaction, she believes the 1903 outcries of the British press to be the only important instances, and there they were more part of a general anti-German sentiment than a direct result of the German railway plans.

A more fundamental objection is that of S.B. Fay in his "Origins of the World War" [25]. Professor Fay (p. 32) sees these five main underlying causes of World War I:

1. The system of secret alliances
2. Militarism
3. Nationalism
4. Economic imperialism
5. The newspaper press

In a brief discussion of these underlying causes, Fay says that railway concessions "are one of the most important forms of economic imperialism because they involve political as well as economic interests." However, Fay disclaims further effort to trace underlying causes as being beyond the scope of any one book. Yet on page 46, at the beginning of his study, he writes: "Generally speaking, however, this economic imperialism is usually exaggerated as one of the underlying causes of the War.... If one reads the diplomatic correspondance of the years before the War, one is struck by the relatively slight emphasis which is given to these economic rivalries, which haunt so largely the mind of the agitated business man and newspaper editor. It is not so much questions of economic rivalry as those of prestige, boundaries, armies and navies, the balance of power, and possible shiftings in the system of alliances which provide reams of diplomatic correspondence and raise the temperature in the Foreign Offices to the danger point." After which, Professor Fay plunges into a marvelously vivid account of the diplomatic exchanges prior to the war. At the end of his study he returns to the attack. On page 558 he says: "Economic rivalry, national ambitions and antagonisms, and newspaper incitements [played a role in bringing on the Great War]. But it is doubtful if all these [together] could have led to war if it had not been for the assassination of Franz Ferdinand. This was the flame which caused...the rapid and complex succession of events which culminated in a world war, and for this Serbian nationalism was ultimately responsible."

The essence of Professor Fay's objection to the Railway (or economic factors in general) as a cause of the war is quite clear from these extracts. Diplomacy turns out to be the all-in-all, or virtually the all-in-all, for Fay. I will discuss this line of argument and the points of view brought out earlier, in the concluding section of this paper.

Conclusion

Professor Fay's line of reasoning strikes at the very roots of the idea of the Baghdad Railway, or any other economic problem for that matter, as being a cause of war. Therefore, I will deal with Professor Fay first before tackling the other arguments.

What does Fay do? He cuts the statesman off from the whole material world. The world becomes a stage on which intrigues are spun out, bluffs are made or called, and shouts and strange silences become the weapons in a shadow game of conflict. And in the end, what happens? An assassin's bullet rings down the curtain. But can this really be the case? Do diplomats argue in a void? Or is it more reasonable to say that the real world is somehow the substructure of the idea world in which wars are hatched? Even a Descartes cannot trace the exact transformation from the thing-in-itself to the thing-in-the-mind. But psychology has shown us that the most horrible nightmares are derived from certain distinct physical and psychical realities. With less irrational behavior, the underlying causes are more easily found. So it is with World War I. One of these realities behind the war is the Baghdad Railway. I shall now do my best to prove this.

In the early sections of this paper I have emphasized the economic development of Germany prior to the war. The incredible increase in Germany's industrial might became a factor in the thinking of all Europeans. Non-Germans were jealous and frightened of this power; Germans were filled with exaltation at their own deeds (see Helfferich, [11]). With this might behind her, Germany became a world power for the first time in history. She sought colonies, fought trade wars, threatened Britain's naval supremacy. And in the Near East she began the economic penetration of Turkey--spearheaded by the Baghdad Railway. These are facts; these are facts only because of Germany's increase in economic power; diplomacy has nothing to do with this. Diplomacy does not create a Krupp or an I.G. Farben, but a Krupp or a Farben gives a new edge to diplomacy.

Now, was the Railway important to European diplomacy or was it not? Was it just a footnote (Fay, [25]), a pawn (Wolf, [9]), a minor irritant (Chapman, [6])? The answer is no. Those who have studied the Railway, including Wolf and Chapman, fill their theses with details of disputes, deadlocks, arguments. As early as 1899, England was forming a protectorate over Kuwait to block the Railway's access to the Persian Gulf. Refusal to let the Turks raise customs duties to pay for the

Railway, refusal to join in the Railway management, refusal to allow Railway shares to be traded on their exchanges--these were the actions of France and England. Does this make the Railway a minor matter? I think not.

What about the Germans themselves? Brandenburg, in his "Bismarck to World War" [12], has a reference to the Railway in 42 out of 520 pages. Admittedly, some of the references are to agreements into which the Railway entered only as a bargaining point. But what a persistent bargaining point! Why was this? It was because Turkey and the Railway had become to Germany what Morocco was to France and what Egypt was to England. No colony of Germany had this status. The visits of the Kaiser to the Sultan were momentous occasions to European chancelleries. Writers like Rohrbach made trip after trip to Turkey to report back on the more and more wonderful possibilities for mining, irrigation, markets, military usefulness. Marschall von Biederstein, probably the best diplomat of the German Foreign Service, chose Constantinople for his Ambassadorship when he stepped down from the office of Foreign Secretary in 1897--and he stayed there as long as he could. Turkey was Germany's white hope. Was Germany reasonable in this? Was she not paying too high a price for a problematical future? Perhaps. But the same can be said of Britain's obsession with the route to India and the French fanaticism about North Africa--which persisted into the post-World War II period. The important facts are that Turkey existed, the Baghdad Railway was in progress, and the Germans had definite and strong ideas on the importance of these facts to them as a nation. To argue that the trade with Turkey was only a small fraction of Germany's world trade (Wolf) is to miss the essential connection between facts and national hopes based on these facts.

So far I have attempted to show that the Railway was:

1. A continued source of conflict between Germany and other world powers
2. A key facet of German's national hopes and ambitions.

There is remaining, however, the most important aspect of all: the role of the Railway in promoting the alliance system which had so much to do with the stupendous scale of World War I. In 1875, Bismarck had stated in the Reichstag that Germany's interests in the Turkish-Balkan area "were not worth the bones of a single Pomeranian Grenadier." Bismarck was determined not to be involved in an area where Austria and Russia were at odds. As he said in 1886, since Germany could not appease one of these nations in this area without offending the other--both extremely dangerous as enemies--it was not at all worthwhile to become involved.

This was not a difficult policy to follow in these early days.* But the world was changing. Not by accident, not by design (as Helfferich puts it [11]), Germany's economic power began to flow into southeastern Europe and into the Ottoman Empire. What was the result? Germany became involved in the Balkans as she had not been in Bismarck's time. England was able to let Germany guard Constantinople and began to cut loose from Turkey (Brandenburg, [12]). The French and English began working together against Germany in the Public Debt Administration of Turkey (Blaisdell, [21]). Faced with the new German threat to Persia, Russia and England were able to settle their differences in 1907 at Reval--to make the "unmakable entente" (Hoffman, [14]). All the other sources of conflict--Alsace-Lorraine, Bosnia, Herzegovina, the German Navy--affected only one of the Entente powers. Only the Baghdad Railway had the unenviable distinction of developing hostility in all three Entente powers simultaneously. The result was to make Germany feel ever more encircled and to move her closer to a dangerous alliance with Austria.

In summing up: the Railway was a manifestation of a dramatic and alarming growth of German economic power. It played a role in the British-German trade rivalry, in their strategic maneuverings, and in the German-English press controversies. The Railway helped unite the Entente powers against Germany and this led Germany into a fear of encirclement, her increasing involvement in the Balkans, and her dangerous alliance with Austria. German hopes for the Railway undoubtedly were exaggerated, but failure to recognize these hopes on the part of the Entente powers helped bring on World War I. As Mills says in his "The Causes of World War III" [26], allowing sources of national conflicts to grow without attending to them is to court disaster. The Railway involved a major conflict of national interests; failure to estimate these sources of this conflict correctly on both German and Entente sides definitely helped bring on World War I.

* Austrian, British, French, and Italian ships dominated the eastern Mediterranean trade. It was not until 1889 that the first German passenger ship reached the Near East (Rosen, [28], p. 39). Contrast this with Morgenthau's description of the first train to make it all the way from Berlin to Constantinople on January 17, 1916. (Morgenthau was American Ambassador to Turkey [27, p. 273]. "There was great rejoicing in Constantinople.... The railroad station was decorated with flags and flowers and the whole German and Austrian population, including the Embassy's staffs, turned out to welcome the incoming train."

AFTERWORD

This paper was prepared in the spring of 1959 for a New York University Graduate History Seminar in 20th Century European History. I believe it has value for a CNA audience in two important respects:

First, it documents a complex web of interests and rivalries in the Middle East. Today some of the players have changed, but the interaction of strategies and economic interests, of shifting alliances, and of interventions by the great powers continues.

Second, the paper illustrates how difficult it is to ascribe cause-and-effect relations in human affairs--even after the event. How much more difficult, then, to predict the consequences of what we do today on what tomorrow holds--for ourselves and for those who dwell in this crossroads of the world.

BIBLIOGRAPHY

BOOKS

General

1. Bennis, F. Lee. European History Since 1870. 4th ed. New York, 1955.
2. Brandenburg, Erich, and Anon. The German Empire: 1870-1914. Encyclopaedia Britannica. Vol. 10, pp. 293-304. 1952
3. Florinsky, Michael T. Russia: A History and an Interpretation. 2 vols. New York, 1955.
4. Sherrington, Charles Ely Rose. Baghdad Railway. Encyclopaedia Britannica. Vol. 2, pp. 924-925. 1952.
5. Taylor, A.J.P. The Course of German History: A Survey of the Development of Germany since 1815. New York, 1946. (Written during World War II, this is an incredibly bitter book. The scholarship behind it makes it much more dangerous than Sarolea's book. At times, however, Professor Taylor very much overreaches himself. Perhaps the most fantastic example occurs on page 19: "In the rest of Europe, religious reform meant going forward; with Luther, it meant going back, repudiating everything that was carrying civilized life beyond barbarism....Even the technical occasion of his breach with Rome was symbolic: he objected to the sale of indulgences in order to raise money for the building of St. Peter's--if it had been for the purpose of massacring German peasants, Luther might never have become a Protestant.")

The Berlin-Baghdad Railway

6. Chapman, Maybelle K. Great Britain and the Baghdad Railway, 1888-1914. Smith College Studies in History, XXXI, Mass., 1948. (Mrs. Chapman is a thoroughly refreshing writer. She simply does not believe in the Baghdad Railway as a major cause of World War I. For Mrs. Chapman, and her readers, the Railway is interesting for its own sake.)
7. Earle, Edward M. Turkey, The Great Powers, and the Baghdad Railway-A Study in Imperialism. New York, 1923. (Earle is the grand old man of the Baghdad Railway. Everyone tips his hat to Earle before commencing his own account. This includes Blaisdell, Yalman, Wolf, etc. Excellent on British press reaction. Has numerous hazy spots.)
8. Stratton, Morton Brown. British Communications in the Middle East, 1885-1939. University of Pennsylvania Doctoral

Dissertation. Philadelphia, 1943. (Only Chapters VI and VII are available in N.Y.U. library. Chapters I and II, which are the most important ones for this paper, are available only on microfilm from the University of Pennsylvania.)

9. Wolf, John B. The Diplomatic History of the Baghdad Railroad. University of Missouri Studies, XI, 1936.

German Economic Development

10. Clapman, J.H. The Economic Development of France and Germany: 1815-1914. 4th ed. Cambridge (Eng.), 1951. (I found this rather disappointing. His economic history of Britain is much superior. Nevertheless, it is a valuable comparative account and I am glad I skimmed it.)
11. Helfferich, Dr. Karl. Germany's Economic Progress and National Wealth, 1888-1913. New York, 1914. (Helfferich was first son-in-law to the director of the Deutsche Bank, later director and Germany's finance minister. The essence of this little book is the irresistible growth of German economic power: the world must give way!)

German Foreign Policy and Trade Rivalry

12. Brandenburg, Erich. From Bismarck to the World War: A History of German Foreign Policy, 1870-1914. London, 1927. (Brandenburg briefly discusses the Railway but does not give it the slightest mention in his concluding chapter on the causes of World War I. He sees the War as being caused by the expansionist aims of Russia and the revanche movement in France. Germany had the least to gain from the War. Her chief mistakes were abandonment of Bismarck's policies for the misguided aggressiveness of the Kaiser and letting herself be involved in the intrigues of the Austrian foreign office.)
13. Hammann, Otto. The World Policy of Germany, 1890-1912. London, 1927. (Hammann was chief of the press division, German foreign office, 1893-1917.)
14. Hoffman, Ross. Great Britain and the German Trade Rivalry, 1875-1914. Philadelphia, 1933. (Gives a very effective breakdown of trade and shipping statistics during the period of England's economic decline vis-a-vis Germany. For the purposes of this paper, more useful than Clapman.)
15. Sarolea, Charles. The Anglo-German Problem. New York, 1912. (Sarolea, a naturalized British citizen (originally from Belgium), is the opposite side of the coin from Brandenburg. Sarolea sees the Germans as deliberately building up anti-British

feeling among the German people for one purpose only: war. If the Germans would only recognize that England just must have the biggest navy, and that only a few countries came to power at the right time to win colonies!)

16. Sontag, Raymond James. European Diplomatic History, 1871-1932. New York and London, 1932.
17. Sontag, Raymond James. Germany and England: Background of Conflict, 1848-1894. London and New York, 1938.
18. Treitschke, Heinrich von. Germany, France, Russia, and Islam. New York and London, 1915. (Treitschke is the German counterpart of Taylor. His rabid jingoism knows no bounds.)

Biography

19. Eyck, Erich. Bismarck and the German Empire. London, 1950. (A chilling picture of Bismarck and his Germany. Nothing on the railway but invaluable for the German background.)
20. Kurenberg, Joachim von. The Kaiser: A Life of Wilhelm II, Last Emperor of Germany. New York, 1955. (Kurenberg makes it pretty clear that Wilhelm II had to get rid of Bismarck if he wished to be master in his own house. Unfortunately, despite every effort to show the Kaiser in a favorable light, Wilhelm II emerges as a badly informed and headstrong ruler.)

Turkey

21. Blaisdell, Donald C. European Financial Control in the Ottoman Empire. New York, 1929. (This is an extremely detailed analysis. It includes a certain amount of data on the Railway but is most valuable for its picture of a complex interlocking tangle of high finance and low intrigue among the European states and Turkey.)
22. Lengyel, Emil. Turkey. New York, 1941. (With the exception of Blaisdell, neither this nor the other Turkish books are much good on Turkey and the Baghdad Railway. (In comparison, no German history can escape at least a page or two on the Railway.) The pertinent chapters in Lengyel, Luke, and Price give a picture of the corruption of Abdul Hamid's court, the web of intrigue and police spying throughout Turkey, and the explosive currents of the Young Turk movement.)
23. Luke, Sir Harry. The Old Turkey and the New-from Byzantium to Ankara. London, 1955.

24. Price, M. Phillips. A History of Turkey from Empire to Republic. London, 1956.

The Causes of War

25. Fay, Sidney Bradshaw. The Origins of the World War. 2nd. ed, revised. 2 vols. in one. New York, 1930. (A thorough study, on the political level, of documentary and autobiographical material available up to the date of publication. The German documents available were substantially complete by 1930; the English and Austrian, fairly complete; the French were just beginning to publish. Many Russian documents had been published by the Bolsheviks. No official collections were available from Serbia, though numerous unofficial collections, memoirs, and the like had been published.

The tone of the work is admirably moderate. The style is slightly old-fashioned. My chief criticism is that Fay slights the economic and social causes of the war in his concentration on personalities and diplomacy. All in all, however, it is an astounding piece of research. It is a shame a more recent edition was not possible-but even so it has been and will continue to be an extremely valuable book.)

26. Mills, C. Wright. The Cause of World War III. New York, 1958. (A doctrinaire crusading pamphlet rather than a clearly reasoned study. Very provocative, however, and also very disquieting.)

Memoirs

27. Morgenthau, Henry. Ambassador Morgenthau's Story. New York, 1919. (Morgenthau was American Ambassador to Turkey, 1913-1916. He reminds me very much of the old-fashioned figure of the contemporary U.S. ambassador to Russia, Mr. Francis. He is the same sort of fussy, well-intentioned, simple old fellow. He gives a certain amount of naively-expressed local color to the Turkish scene just prior to World War I.)
28. Rosen, Friedrich. Oriental Memoirs of a German Diplomatist. New York, 1930. (Herr Rosen's diplomatic career was spent mostly in or about the Near East, including Turkey, in the last 40 years of the 19th century. He gives several interesting side-lights on the Baghdad Railway.)
29. Yalman, Abdul Emin. Turkey in May Time. Norman, Okla., 1956. (Yalman has been a Turkish journalist since before 1914. In 1959 he was editor and publisher of the anti-communist, pro-American Istanbul daily, Vataa.)

PERIODICALS

Russia, Turkey, and the Great Powers

30. Mosely, Phillip E. "Russian Policy in 1911-12". Journal of Modern History, 71-7, vol. 12, 1940. (Mr. Mosely's article, which is based on Czarist archives just then released by the Soviets, paints a convincing picture of confusion and contradiction in Russia's foreign policy. Policy was made in Constantinople, cancelled in Moscow, reaffirmed in Paris...instead of a single policy, Russian diplomacy was a hodge podge of diverse schemes.)

Contemporary British Opinion

With the exception of the Article by Dr. Gwinner of the Deutsche Bank, all the articles which follow were written by Englishmen between 1900 and 1917. These articles, which are only a small sample of the total, cover a number of writers, journals, and dates. The reactions to the Baghdad Railway are varied. They range from opposition to it as a dangerous German plan to dominate the Near East or belief that it is a foolish or inconsequential enterprise, to support for the Railway as a promoter of trade and a civilizing influence.

31. Anon. "The Baghdad Railway." Edinburg Review, 371-398, vol. 206, 1907. (A review article covering six articles or books published in France and England. Author sees the Railway as a means of uniting Turkey and helping her to progress, but he views fear of German annexation of Turkey as a chimera. Believes France and England should cheer Germany on as a fellow European power helping to civilize the world.)
32. Dicey, Edward. "England and Germany." The Empire Review, 368-375, vol. 18, 1910. (Takes a very sanguine view of the probability of Anglo-German cooperation in general matters and in particular in regard to the Baghdad Railway.)
33. Fraser, Lovat. "Why Help the Baghdad Railway?". The National Review, 314-322, vol. 57, 1911. (The same general line of argument as in his 1912 article or in Geraud's 1914 article....He urges Britain not to let Turkey raise her duties-which would help subsidize railway building at the expense of British trade. Sees "internationalization" as much a blunder in 1911 as it was in 1903 in the days of Mr. Balfour and Lord Lansdowne. Unlike Hogarth, believes the Germans will make Basra, on the Shatt-al-Arab (the confluence of the Tigris and the Euphrates) a first-class port which will not threaten the British on the Persian Gulf. But if the British were to let the line extend to Kuwait

and build a naval base there, England would be "giving hostages to fortune".)

34. Fraser, Lovat. "The Baron [Marschall von Biederstein] and his Baghdad Railway." The National Review, 606-619, vol. 59, 1912. (Believes that German cries of "English opposition" are phoney. Sees no advantage to British participation in a railway entirely in Turkish territories. Urges that the British do not demean themselves by trying to please the Germans but that they stick to the policy of maintaining British supremacy in the Persian Gulf as "emphatically proclaimed by Lord Lansdowne and reiterated by Sir Edward Grey".)
35. Geraud, A. "A New German Empire: The Story of the Baghdad Railway." The Nineteenth Century, 958-972, 1312-1326, vol. 75, 1914. (Sees "Modern Turkey, weakened and dismembered" as being "crushed under the overwhelming weight of the Baghdad Railway enterprise and everything connected with it." English and French opposition has been too hesitant. The attempts to deny the Germans the help of French funds has been futile. England's agreement with Russia on Persia has been circumvented by Germany's convention in Baghdad with Russia (Potsdam, 1910). Only the March 9, 1911 program of Sir Edward Grey as announced in Commons offers much help: (1) acknowledgement of the British protectorate at Kuwait; (2) opposition to an increase of Turkish customs duties; (3) construction of British railways whenever possible to offset the leverage of the Baghdad Railway project.)
36. Gwinner, Arthur von. "The Baghdad Railway and the Question of British Cooperation." The Nineteenth Century, 1083-1094, vol. 65, 1909. (Dr. Gwinner succeeded Dr. Siemens at the Deutsche Bank in 1901. He claims that the completed sections of the Railway could only have been built with the financial support of the Turkish government. He also claims that once opened to traffic, the railways have opened up new sources of revenue to Turkey, have bound Turkey together, and are on their way to paying for themselves. He deplores the press campaign of 1903 which dissuaded Lord Lansdowne from support of British participation in the Railway: if the British had come in the Railway would be built by now and Britain would be sharing in the profits.)
37. Hogarth, D.G.. "The Baghdad Railway." The National Review, 462-473, vol. 39, 1902. (Sees the projected Railway as the successor to a series of futile English attempts to lay rails in Turkey and in the Euphrates Valley. Doubts if the line will pay; doubts if the Baghdad to Gulf section can be built unless the English dominate that section of the line; discounts the idea of the Railway as a strategic menace to British India, Egypt, or the revenues of the Suez Canal.)

38. Lynch, H.F.B. "The Baghdad Railway." Fortnightly Review, 375-387, N.S. 89, 1911. (Lynch I believe to be related to the Lynch Brothers who operated the Euphrates River Boat Line parallel to the southern section of the proposed route of the Railway.) (Lynch dismisses the idea of a dramatic increase in German trade with Turkey or of extensive German colonization as fanciful. But the strategic threat to Egypt, Persia, and the Suez Canal he considers to be very real. He is also alarmed at the idea of the custom increase needed to pay for the extension of the Railway.)
39. Pears, Edwin. "The Baghdad Railway." Contemporary Review, 570-591, vol. 94, 1908. (Sees the Railway as being completed within a few years. Believes Germans are too cautious to make an alliance with Turkey lest this antagonize Russia. However, Russia's fears are real. Therefore, it is in the interest of peace that Mr. Balfour's original suggestion for internationalization of the Railway should be followed up.)
40. Woods, H. Charles. "The Baghdad Railway in the War." The Fortnightly Review, 235-246, N.S. 102, 1917. (Woods believes a lasting peace can only be based on splitting Turkey away from Germany. Unless this is done, "either on the field of battle or in the arena of diplomacy...the advent of peace itself will still leave us face to face with the danger of a renewed conflict over German domination from Hamburg to the Persian Gulf".)
41. Woods, H. Charles. "The Baghdad Railway and its Tributaries." The Geographical Journal, 32-57, vol. 50, 1917. (Mostly geographical material. Filled with maps and photographs.)

CNA PROFESSIONAL PAPERS - 1978 TO PRESENT*

- PP 211
Mizrahi, Maurice M., "On Approximating the Circular Coverage Function," 14 pp., Feb 1978, AD A054 429
- PP 212
Mangel, Marc, "On Singular Characteristic Initial Value Problems with Unique Solution," 20 pp., Jun 1978, AD A058 535
- PP 213
Mangel, Marc, "Fluctuations in Systems with Multiple Steady States. Application to Lanckester Equations," 12 pp., Feb 78 (Presented at the First Annual Workshop on the Information Linkage Between Applied Mathematics and Industry, Naval PG School, Feb 23-25, 1978), AD A071 472
- PP 214
Weinland, Robert G., "A Somewhat Different View of The Optimal Naval Posture," 37 pp., Jun 1978 (Presented at the 1976 Convention of the American Political Science Association (APSA)/US Panel on "Changing Strategic Requirements and Military Posture"), Chicago, Ill., September 2, 1976), AD A056 228
- PP 215
Colle, Russell C., "Comments on: Principles of Information Retrieval by Manfred Kochen," 10 pp., Mar 78 (Published as a Letter to the Editor, Journal of Documentation, Vol. 31, No. 4, pages 298-301), December 1975), AD A054 426
- PP 216
Colle, Russell C., "Lotka's Frequency Distribution of Scientific Productivity," 18 pp., Feb 1978 (Published in the Journal of the American Society for Information Science, Vol. 28, No. 6, pp. 366-370, November 1977), AD A054 425
- PP 217
Colle, Russell C., "Bibliometric Studies of Scientific Productivity," 17 pp., Mar 78 (Presented at the Annual meeting of the American Society for Information Science held in San Francisco, California, October 1976), AD A054 442
- PP 218 - Classified
- PP 219
Huntzinger, R. LaVar, "Market Analysis with Rational Expectations: Theory and Estimation," 60 pp., Apr 78, AD A054 422
- PP 220
Maurer, Donald E., "Diagonalization by Group Matrices," 26 pp., Apr 78, AD A054 443
- PP 221
Weinland, Robert G., "Superpower Naval Diplomacy in the October 1973 Arab-Israeli War," 76 pp., Jun 1978 (Published in Seapower in the Mediterranean: Political Utility and Military Constraints, The Washington Papers No. 61, Beverly Hills and London: Sage Publications, 1979) AD A055 564
- PP 222
Mizrahi, Maurice M., "Correspondence Rules and Path Integrals," 30 pp., Jun 1978 (Invited paper presented at the CNRS meeting on "Mathematical Problems in Feynman's Path Integrals," Marseille, France, May 22-26, 1978) (Published in Springer Verlag Lecture Notes in Physics, 106, (1979), 234-253) AD A055 536
- PP 223
Mangel, Marc, "Stochastic Mechanics of Molecule-Molecule Reactions," 21 pp., Jun 1978, AD A056 227
- PP 224
Mangel, Marc, "Aggregation, Bifurcation, and Extinction in Exploited Animal Populations," 48 pp., Mar 1978, AD A058 536
"Portions of this work were started at the Institute of Applied Mathematics and Statistics, University of British Columbia, Vancouver, B.C., Canada
- PP 225
Mangel, Marc, "Oscillations, Fluctuations, and the Hopf Bifurcation," 43 pp., Jun 1978, AD A058 537
"Portions of this work were completed at the Institute of Applied Mathematics and Statistics, University of British Columbia, Vancouver, Canada.
- PP 226
Relston, J. M. and J. W. Mann, "Temperature and Current Dependence of Degradation in Red-Emitting GaP LEDs," 34 pp., Jun 1978 (Published in Journal of Applied Physics, 50, 3630, May 1979) AD A058 538
"Bell Telephone Laboratories, Inc.
- PP 227
Mangel, Marc, "Uniform Treatment of Fluctuations at Critical Points," 50 pp., May 1978, AD A058 539
- PP 228
Mangel, Marc, "Relaxation at Critical Points: Deterministic and Stochastic Theory," 54 pp., Jun 1978, AD A058 540
- PP 229
Mangel, Marc, "Diffusion Theory of Reaction Rates, I: Formulation and Einstein-Smoluchowski Approximation," 50 pp., Jan 1978, AD A058 541
- PP 230
Mangel, Marc, "Diffusion Theory of Reaction Rates, II: Ornstein-Uhlenbeck Approximation," 34 pp., Feb 1978, AD A058 542
- PP 231
Wilson, Desmond P., Jr., "Naval Projection Forces: The Case for a Responsive MAF," Aug 1978, AD A054 543
- PP 232
Jacobson, Louis, "Can Policy Changes Be Made Acceptable to Labor?" Aug 1978 (Submitted for publication in Industrial and Labor Relations Review), AD A061 528

*CNA Professional Papers with an AD number may be obtained from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151. Other papers are available from the Management Information Office, Center for Naval Analyses, 2000 North Beauregard Street, Alexandria, Virginia 22311. An index of Selected Publications is also available on request. The index includes a Listing of Professional Papers; with abstracts; issued from 1969 to June 1981.

- PP 233
Jacobson, Louis, "An Alternative Explanation of the Cyclical Pattern of Quits," 23 pp., Sep 1978
- PP 234 - Revised
Jondrou, James and Levy, Robert A., "Does Federal Expenditure Displace State and Local Expenditure: The Case of Construction Grants," 25 pp., Oct 1979, AD A061 529
- PP 235
Mizrahi, Maurice M., "The Semiclassical Expansion of the Anharmonic-Oscillator Propagator," 41 pp., Oct 1978 (Published in Journal of Mathematical Physics 20 (1979) pp. 844-855), AD A061 538
- PP 237
Maurer, Donald, "A Matrix Criterion for Normal Integral Bases," 10 pp., Jan 1979 (Published in the Illinois Journal of Mathematics, Vol. 22 (1978), pp. 672-681)
- PP 238
Utgoff, Kathleen Classen, "Unemployment Insurance and The Employment Rate," 20 pp., Oct 1978 (Presented at the Conference on Economic Indicators and Performance: The Current Dilemma Facing Government and Business Leaders, presented by Indiana University Graduate School of Business), AD A061 527
- PP 239
Trost, R. P. and Warner, J. T., "The Effects of Military Occupational Training on Civilian Earnings: An Income Selectivity Approach," 38 pp., Nov 1979k, AD A077 831
- PP 240
Powers, Bruce, "Goals of the Center for Naval Analyses," 13 pp., Dec 1978, AD A063 759
- PP 241
Mangel, Marc, "Fluctuations at Chemical Instabilities," 24 pp., Dec 1978 (Published in Journal of Chemical Physics, Vol. 69, No. 8, Oct 15, 1978), AD A063 787
- PP 242
Simpson, William R., "The Analysis of Dynamically Interactive Systems (Air Combat by the Numbers)," 160 pp., Dec 1978, AD A063 760
- PP 243
Simpson, William R., "A Probabilistic Formulation of Murphy Dynamics as Applied to the Analysis of Operational Research Problems," 18 pp., Dec 1978, AD A063 761
- PP 244
Sherman, Allen and Horowitz, Stanley A., "Maintenance Costs of Complex Equipment," 20 pp., Dec 1978 (Published By The American Society of Naval Engineers, Naval Engineers Journal, Vol. 91, No. 6, Dec 1979) AD A071 473
- PP 245
Simpson, William R., "The Accelerometer Methods of Obtaining Aircraft Performance from Flight Test Data (Dynamic Performance Testing)," 403 pp., Jun 1979, AD A075 226
- PP 246
Brachling, Frank, "Layoffs and Unemployment Insurance," 35 pp., Feb 1979 (Presented at the Nber Conference on "Low Income Labor Markets," Chicago, Jun 1978), AD A096 629
- PP 248
Thomas, James A., Jr., "The Transport Properties of Dilute Gases in Applied Fields," 183 pp., Mar 1979, AD A096 464
- PP 249
Glasser, Kenneth S., "A Secretary Problem with a Random Number of Choices," 23 pp., Mar 1979
- PP 250
Mangel, Marc, "Modeling Fluctuations in Macroscopic Systems," 26 pp., Jun 1979
- PP 251
Trost, Robert P., "The Estimation and Interpretation of Several Selectivity Models," 37 pp., Jun 1979, AD A075 941
- PP 252
Munn, Walter R., "Position Finding with Prior Knowledge of Covariance Parameters," 5 pp., Jun 1979 (Published in IEEE Transactions on Aerospace & Electronic Systems, Vol. AES-15, No. 3, Mar 1979)
- PP 253
Glasser, Kenneth S., "The d-Choice Secretary Problem," 32 pp., Jun 1979, AD A075 225
- PP 254
Mangel, Marc and Quenbeck, David B., "Integration of a Bivariate Normal Over an Offset Circle," 14 pp., Jun 1979, AD A096 471
- PP 255 - Classified, AD B051 441L
- PP 256
Maurer, Donald E., "Using Personnel Distribution Models," 27 pp., Feb 1980, AD A082 218
- PP 257
Thaler, R., "Discounting and Fiscal Constraints: Why Discounting is Always Right," 10 pp., Aug 1979, AD A075 224
- PP 258
Mangel, Marc S. and Thomas, James A., Jr., "Analytical Methods in Search Theory," 86 pp., Nov 1979, AD A077 832
- PP 259
Glass, David V.; Hsu, Ih-Ching; Munn, Walter R., and Parin, David A., "A Class of Commutative Markov Matrices," 17 pp., Nov 1979, AD A077 833
- PP 260
Mangel, Marc S. and Cope, Davis K., "Detection Rate and Sweep Width in Visual Search," 14 pp., Nov 1979, AD A077 834
- PP 261
Villa, Carlos L.; Zvijac, David J. and Ross, John, "Frank-Condon Theory of Chemical Dynamics. VI. Angular Distributions of Reaction Products," 14 pp., Nov 1979 (Reprinted from Journal Chemical Phys. 70(12), 15 Jun 1979), AD A076 287
- PP 262
Peterson, Charles C., "Third World Military Elites in Soviet Perspective," 50 pp., Nov 1979, AD A077 835
- PP 263
Robinson, Kathy I., "Using Commercial Tankers and Container-ships for Navy Underway Replenishment," 25 pp., Nov 1979, AD A077 836

- PP 264
Weinland, Robert G., "The U.S. Navy in the Pacific: Past, Present, and Glimpses of the Future," 31 pp., Nov 1979 (Delivered at the International Symposium on the Sea, sponsored by the International Institute for Strategic Studies, The Brookings Institution and the Yomiuri Shimbun, Tokyo, 16-20 Oct 1978) AD A066 837
- PP 265
Weinland, Robert G., "War and Peace in the North: Some Political Implications of the Changing Military Situation in Northern Europe," 18 pp., Nov 1979 (Prepared for presentation to the Conference of the Nordic Balance in Perspective: The Changing Military and Political Situation," Center for Strategic and International Studies, Georgetown University, Jun 15-16, 1978) AD A077 838
- PP 266
Utgoff, Kathy Classen, and Brechling, Frank, "Taxes and Inflation," 23 pp., Nov 1979, AD A081 194
- PP 267
Trost, Robert P., and Vogel, Robert C., "The Response of State Government Receipts to Economic Fluctuations and the Allocation of Counter-Cyclical Revenue Sharing Grants," 12 pp., Dec 1979 (Reprinted from the Review of Economics and Statistics, Vol. LXI, No. 3, August 1979)
- PP 268
Thomason, James S., "Seaport Dependence and Inter-State Cooperation: The Case of Sub-Saharan Africa," 141 pp., Jan 1980, AD A081 193
- PP 269
Weiss, Kenneth G., "The Soviet Involvement in the Ogaden War," 42 pp., Jan 1980 (Presented at the Southern Conference on Slavic Studies in October, 1979), AD A082 219
- PP 270
Rennek, Richard, "Soviet Policy in the Horn of Africa: The Decision to Intervene," 52 pp., Jan 1980 (To be published in "The Soviet Union in the Third World: Success or Failure," ed. by Robert M. Donaldson, Westview Press, Boulder, Co., Summer 1980), AD A081 195
- PP 271
McConnell, James, "Soviet and American Strategic Doctrines: One More Time," 43 pp., Jan 1980, AD A081 192
- PP 272
Weiss, Kenneth G., "The Azores in Diplomacy and Strategy, 1940-1945," 46 pp., Mar 1980, AD A085 094
- PP 273
Makada, Michael K., "Labor Supply of Wives with Husbands Employed Either Full Time or Part Time," 39 pp., Mar 1980, AD A082 220
- PP 274
Munn, Walter R., "A Result in the Theory of Spiral Search," 9 pp., Mar 1980
- PP 275
Goldberg, Lawrence, "Recruiters Advertising and Navy Enlistments," 34 pp., Mar 1980, AD A082 221
- PP 276
Goldberg, Lawrence, "Delaying an Overhaul and Ship's Equipment," 40 pp., May 1980, AD A085 095
- PP 277
Mangel, Marc, "Small Fluctuations in Systems with Multiple Limit Cycles," 19 pp., Mar 1980 (Published in SIAM J. Appl. Math., Vol. 38, No. 1, Feb 1980) AD A086 229
- PP 278
Mizrahi, Maurice, "A Targeting Problem: Exact vs. Expected-Value Approaches," 23 pp., Apr 1980, AD A085 096
- PP 279
Weit, Stephen M., "Causal Inferences and the Use of Force: A Critique of Force Without War," 30 pp., May 1980, AD A085 097
- PP 280
Goldberg, Lawrence, "Estimation of the Effects of A Ship's Steaming on the Failure Rate of its Equipment: An Application of Econometric Analysis," 23 pp., Apr 1980, AD A085 098
- PP 281
Mizrahi, Maurice M., "Comment on 'Discretization Problems of Functional Integrals in Phase Space'," 2 pp., May 1980, published in "Physical Review D", Vol. 22 (1980), AD A094 994
- PP 283
Dismales, Bradford, "Expected Demand for the U.S. Navy to Serve as An Instrument of U.S. Foreign Policy: Thinking About Political and Military Environmental Factors," 30 pp., Apr 1980, AD A085 099
- PP 284
J. Kallison,* M. Munn, and U. Sumita,** "The Laguerre Transform," 119 pp., May 1980, AD A085 100
*The Graduate School of Management, University of Rochester and the Center for Naval Analyses
**The Graduate School of Management, University of Rochester
- PP 285
Rennek, Richard B., "Superpower Security Interests in the Indian Ocean Area," 26 pp., Jun 1980, AD A087 113
- PP 286
Mizrahi, Maurice M., "On the WKB Approximation to the Propagator for Arbitrary Hamiltonians," 25 pp., Aug 1980 (Published in Journal of Math. Phys., 22(1) Jan 1981), AD A091 307
- PP 287
Cope, Davis, "Limit Cycle Solutions of Reaction-Diffusion Equations," 35 pp., Jun 1980, AD A087 114
- PP 288
Golman, Walter, "Don't Let Your Slides Flip You: A Painless Guide to Visuals That Really Aid," 28 pp., (revised Aug 1982), AD A092 732
- PP 289
Robinson, Jack, "Adequate Classification Guidance - A Solution and a Problem," 7 pp., Aug 1980, AD A091 212
- PP 290
Watson, Gregory M., "Evaluation of Computer Software in an Operational Environment," 17 pp., Aug 1980, AD A091 213
- PP 291
Maddala, G. S.,* and Trost, R. P., "Some Extensions of the Marlove Press Model," 17 pp., Oct 1980, AD A091 946
*University of Florida

- PP 292
Thomas, James A., Jr., "The Transport Properties of Binary Gas Mixtures in Applied Magnetic Fields," 10 pp., Sep 1980 (Published in Journal of Chemical Physics 72(10), 15 May 1980)
- PP 293
Thomas, James A., Jr., "Evaluation of Kinetic Theory Collision Integrals Using the Generalized Phase Shift Approach," 12 pp., Sep 1980 (Printed in Journal of Chemical Physics 72(10), 15 May 1980)
- PP 294
Roberts, Stephen S., "French Naval Policy Outside of Europe," 30 pp., Sep 1980 (Presented at the Conference of the Section on Military Studies, International Studies Association, Kilauea Island, S.C., AD A091 306)
- PP 295
Roberts, Stephen S., "An Indicator of Informal Empire: Patterns of U.S. Navy Cruising on Overseas Stations, 1869-1897," 40 pp., Sep 1980 (Presented at Fourth Naval History Symposium, US Naval Academy, 26 Oct 1979), AD A091 316
- PP 296
Dismukes, Bradford, and Petersen, Charles C., "Maritime Factors Affecting Iberian Security," (Factores Maritimos que Afectan la Seguridad Iberica) 14 pp., Oct 1980, AD A092 733
- PP 297 - Classified
- PP 298
Mizrahi, Maurice M., "A Markov Approach to Large Missile Attacks," 31 pp., Jan 1981, AD A096 199
- PP 299
Jondrow, James M., and Levy, Robert A., "Wage Leadership in Construction," 19 pp., Jan 1981, AD A094 797
- PP 300
Jondrow, James, and Schmidt, Peter, "On the Estimation of Technical Inefficiency in the Stochastic Frontier Production Function Model," 11 pp., Jan 1981, AD A096 160
Michigan State University
- PP 301
Jondrow, James M.; Levy, Robert A.; and Hughes, Claire, "Technical Change and Employment in Steel, Autos, Aluminum, and Iron Ore," 17 pp., Mar 1981, AD A099 394
- PP 302
Jondrow, James M., and Levy, Robert A., "The Effect of Imports on Employment Under Rational Expectations," 19 pp., Apr 1981, AD A099 392
- PP 303
Thomson, James, "The Rarest Commodity in the Coming Resource Wars," 3 pp., Aug 1981 (Published in the Washington Star, 13 Apr 1981), AD A104 221
- PP 304
Duffy, Michael K.; Greenwood, Michael J.;^a and McDowell, John M.,^{aa} "A Cross-Sectional Model of Annual Interregional Migration and Employment Growth: Intertemporal Evidence of Structural Change, 1958-1975," 31 pp., Apr 1981, AD A099 393
^aUniversity of Colorado
^{aa}Arizona State University
- PP 305
Nunn, Laura H., "An Introduction to the Literature of Search Theory," 32 pp., Jun 1981, AD A100 420
- PP 306
Anger, Thomas E., "What Good Are Warfare Models?" 7 pp., May 1981, AD A100 421
- PP 307
Thomson, James, "Dependence, Risk, and Vulnerability," 43 pp., Jun 1981, AD A102 698
- PP 308
Mizrahi, M.M., "Correspondence Rules and Path Integrals, 17 pp., Jul 1981. (Published in "Nuovo Cimento B", Vol. 61, 1981), AD A102 699
- PP 309
Weinland, Robert G., "An (The?) Explanation of the Soviet Invasion of Afghanistan," 44 pp., May 1981, AD A100 422
- PP 310
Stanford, Janette M., and Wu, Tai Te, "A Predictive Method for Determining Possible Three-dimensional Foldings of Immunoglobulin Backbones Around Antibody Combining Sites," 19 pp., Jun 1981 (Published in J. Theor. Biol., 1981), 88, AD A100 423
Northwestern University
- PP 311
Boves, Marianne, Brechling, Frank P. R.; and Utgoff, Kathleen P. Classen, "An Evaluation of UI Funds," 13 pp., May 1981 (Published in National Commission on Unemployment Compensation's "Unemployment Compensation: Studies and Research," Volume 2, Jul 1980), AD A100 424
- PP 312
Jondrow, James; Boves, Marianne; and Levy, Robert, "The Optimum Speed Limit," 23 pp., Jul 1983 (Revised), AD A100 425
- PP 313
Roberts, Stephen S., "The U.S. Navy in the 1980s," 36 pp., Jul 1981, AD A102 696
- PP 314
John, Christopher; Morowitz, Stanley A.; and Lockman, Robert F., "Examining the Draft Debate," 20 pp., Jul 1981, AD A106 192
- PP 315
Buck, Ralph V. (Capt., USN), "Le Catastrophe by any other name....," 4 pp., Jul 1981, AD A102 697
- PP 316
Roberts, Stephen S., "Western European and NATO Navies, 1980," 20 pp., Aug 1981, AD A104 223
- PP 317
Roberts, Stephen S., "Superpower Naval Crisis Management in the Mediterranean," 35 pp., Aug 1981, AD A104 222
- PP 318
Vego, Milan M., "Yugoslavia and the Soviet Policy of Force in the Mediterranean Since 1961," 187 pp., Aug 1981

- PP 319
Smith, Michael W., "Antiair Warfare Defense of Ships at Sea," 46 pp., Sep 1981 (This talk was delivered at the Naval Warfare System and Technology Conference of the American Institute of Aeronautics and Astronautics in Washington on 12 Dec 1980; in Boston on 20 Jan 1981; and in Los Angeles on 12 Jun 1981.), AD A106 191
- PP 320
Trost, R. P.; Lurie, Philip; and Berger, Edward, "A Note on Estimating Continuous Time Decision Models," 15 pp., Sep 1981, AD A106 193
- PP 321
Duffy, Michael K., and Ledman, Jerry R., "The Simultaneous Determination of Income and Employment in United States--Mexico Border Region Economies," 34 pp., Sep 1981, AD A106 540
*Associate Professor of Economics, Arizona State University
- PP 322
Werner, John T., "Issues in Navy Manpower Research and Policy: An Economist's Perspective," 66 pp., Dec 1981, AD A110 221
- PP 323
Bosse, Frederick M., "Generation of Correlated Log-Normal Sequences for the Simulation of Clutter Echoes," 33 pp., Dec 1981
- PP 324
Horowitz, Stanley A., "Quantifying Seapower Readiness," 6 pp., Dec 1981 (Published in Defense Management Journal, Vol. 18, No. 2), AD A110 220
- PP 326
Roberts, Stephen S., "Western European and NATO Navies, 1981," 27 pp., Jul 1982, AD A118 703
- PP 327
Hammon, Colin (Capt., USN), and Graham, David R., "Estimation and Analysis of Navy Shipbuilding Program Disruption Costs," 12 pp., Mar 1980, AD A112 514
- PP 328
Weinland, Robert G., "Northern Waters: Their Strategic Significance," 27 pp., Dec 1980, AD A112 509
- PP 329
Mengel, Marc, "Applied Mathematicians And Naval Operators," 40 pp., Mar 1982 (Revised), AD A116 598
- PP 330
Lockman, Robert F., "Alternative Approaches to Attrition Management," 30 pp., Jan 1982, AD A112 510
- PP 331
Roberts, Stephen S., "The Turkish Straits and the Soviet Navy in the Mediterranean," 15 pp., Mar 1982 (Published in Navy International)
- PP 332
John, Christopher, "The RDF and Amphibious Warfare," 36 pp., Mar 1982, AD A113 592
- PP 333
Lee, Lung-Fai,* and Trost, Robert P., "Estimation of Some Limited Dependent Variable Models with Application to Housing Demand," 26 pp., Jan 1982, (Published in Journal of Econometrics 8 (1978), AD A 112 536
*University of Minnesota
- PP 334
Kenny, Lawrence W.,* Lee, Lung-Fai,** Maddala, G. S.,* and Trost R. P., "Returns to College Education: An Investigation of Self-Selection Bias Based on the Project Talent Data," 15 pp., Jan 1982, (Published in International Economic Review, Vol. 20, No. 3, Oct 1979), AD A112 480
*University of Florida
**University of Minnesota
- PP 335
Lee, Lung-Fai;* Maddala, G. S.;** and Trost, R.P., "Asymptotic Covariance Matrices of Two-Stage Probit and Two-Stage Tobit Methods for Simultaneous Equations Models with Selectivity," 13 pp., Jan 1982, (Published in Econometrica, Vol. 48, No. 2, Mar 1980), AD A112 483
*University of Minnesota
**University of Florida
- PP 336
O'Neill, Thomas, "Mobility Fuels for the Navy," 13 pp., Jan 1982, (Accepted for publication in Naval Institute Proceedings), AD A112 511
- PP 337
Werner, John T., and Goldberg, Matthew S., "The Influence of Non-Pecuniary Factors on Labor Supply: The Case of Navy Enlistment Personnel," 23 pp., Dec 1981, AD A113 094
- PP 339
Wilson, Desmond P., "The Persian Gulf and the National Interest," 11 pp., Feb 1982, AD A112 505
- PP 340
Lurie, Philip; Trost, R. P.; and Berger, Edward, "A Method for Analyzing Multiple Spell Duration Data," 34 pp., Feb 1982, AD A112 504
- PP 341
Trost, Robert P., and Vogel, Robert C.,* "Prediction with Pooled Cross-Section and Time-Series Data: Two Case Studies," 6 pp., Feb 1982, AD A112 503
*Southern Illinois University
- PP 342
Lee, Lung-Fai;* Maddala, G. S.;** and Trost, R. P., "Testing for Structural Change by D-Methods in Switching Simultaneous Equations Models," 5 pp., Feb 1982, AD A112 482
*University of Minnesota
**University of Florida
- PP 343
Goldberg, Matthew S., "Projecting the Navy Enlisted Force Level," 9 pp., Feb 1982, AD A112 484
- PP 344
Fletcher, Jean, W., "Navy Quality of Life and Reenlistment," 13 pp., Nov 1981, AD A113 095

- PP 345
Uttoff, Kathy, and Thaler, Dick, "The Economics of Multi Year Contracting," 47 pp., Mar 1982. (Presented at the 1982 Annual Meeting of the Public Choice Society, San Antonio, Texas, 5-7 Mar 1982), AD A114 732
*Cornell University
- PP 346
Rostker, Bernard, "Selective Service and the All-Volunteer Force," 23 pp., Mar 1982, AD A113 096
- PP 347
McConnell, James, M., "A Possible Counterforce Role for the Typhoon," 24 pp., Mar 1982, AD A116 601
- PP 348
Jondrow, James, and Trost, Robert, "An Empirical Study of Production Inefficiency in the Presence of Errors-in-The-Variables," 14 pp., Feb 1982, AD A113 591
- PP 349
Breckenridge, W. H., and Mainin, O. K., "Collisional Intramultiplet Relaxation of $Cd(5s5p^3P_{0,1,2})$ by Alkane Hydrocarbons," 7 pp., Jul 1981. (Published in Journal of Chemical Physics, 76(4), 15 Feb 1982), AD A113 093
*University of Utah, Dept. of Chemistry
- PP 350
Levin, Marc, "A Method for Increasing the Firepower of Virginia Class Cruisers," 10 pp., Apr 1982. (To be published in U.S. Naval Institute Proceedings), AD A116 602
- PP 351
Coutre, S. E.; Stanford, J. M.; Hovis, J. G.; Stevens, P. W.; and Wu, T. T., "Possible Three-Dimensional Backbone Folding Around Antibody Combining Site of Immunoglobulin MOPC 167," 18 pp., Apr 1982 (Published in Journal of Theoretical Biology)
*Northwestern University, Depts. of Biochemistry & Molecular Biology and Engineering Sciences & Applied Mathematics
- PP 352
Barfoot, C. Bernard, "Aggregation of Conditional Absorbing Markov Chains," 7 pp., Jun 1982 (Presented to the Sixth European Meeting on Cybernetics and Systems Research, held at the University of Vienna, Apr 1982), AD A116 603
- PP 353
Barfoot, C. Bernard, "Some Mathematical Methods for Modeling the Performance of a Distributed Data Base System," 18 pp., Jun 1982. (Presented to the International Working Conference on Model Realism, held at Bad Honnef, West Germany, Apr 1982), AD A116 604
- PP 354
Hall, John V., "Why the Short-War Scenario is Wrong for Naval Planning," 6 pp., Jun 1982., AD A116 702
- PP 356
Cylike, Steven; Goldberg, Matthew S.; Hogan, Paul; and Mairs, Lee; "Estimation of the Personal Discount Rate: Evidence from Military Reenlistment Decisions," 19 pp., Apr 1982, AD A122 419
- PP 357
Goldberg, Matthew S., "Discrimination, Nepotism, and Long-Run Wage Differentials," 13 pp., Sep 1982 (Published in Quarterly Journal of Economics, May 1982)
- PP 358
Akst, George, "Evaluating Tactical Command And Control Systems--A Three-Tiered Approach," 12 pp., Sep 1982, AD 122 478
- PP 359
Quester, Aline; Fletcher, Jean; and Marcus, Alan; "Veteran Status as a Screening Device: Comment," 26 pp., Aug 1982, AD A123 658
- PP 361
Quenbeck, David B., "Methods for Generating Aircraft Trajectories," 51 pp., Sep 1982, AD A122 386
- PP 362
Horowitz, Stanley A., "Is the Military Budget Out of Balance?", 10 pp., Sep 1982, AD A122 368
- PP 363
Marcus, A. J., "Personnel Substitution and Navy Aviation Readiness," 35 pp., Oct 1982, AD A122 420
- PP 364
Quester, Aline, and Nakade, Michael, "The Military's Monopsony Power," 29 pp., Oct 1982, AD A123 657
- PP 365
Greer, William L., and Bartholomew, James C., (Cdr, USN), "Psychological Aspects of Mine Warfare," 15 pp., Oct 1982 AD A128 244
- PP 366
Sprull, Nancy L., and Gestwirth, Joseph L., "On the Estimation of the Correlation Coefficient From Grouped Data," 9 pp., Oct 1982, (Published in the Journal of the American Statistical Association, Sep 1982, Vol. 77, No. 379, Theory and Methods Section), AD A122 382
*George Washington University, Dept. of Statistics
- PP 368
Weinland, Robert G., "The Evolution of Soviet Requirements for Naval Forces--Solving the Problems of the Early 1960s," 41 pp., Dec 1982, AD A123 655
- PP 369
Quester, Aline, and Lockman, Robert, "The All-Volunteer Force: A Positive Perspective," 29 pp., Nov 1982, AD A128 279
- PP 370
Rostker, Bernard D., "Human Resource Models: An Overview," 17 pp., Nov 1982, AD A123 656
- PP 372
Hurley, William J., "An Overview of Acoustic Analysis," 46 pp., Jan 1983, AD A128 316
- PP 373
Jacobson, Louis, "Research to Quantify the Effect of Permanent Change of Station Moves on Wives' Wages and Labor Supply," 35 pp., Jan 1983, AD A128 300
- PP 374
Clay-Mendez, Deborah, and Ballis, Ellen, "Balancing Accession and Retention: The Disaggregate Model," 27 pp., Aug 1982
- PP 375
Feldman, Paul, "Privatizing Airports in Washington, D.C.," 17 pp., Feb. 1983, AD A128 236

- PP 376
Weiss, Kenneth G., "Power Grows Out of the Barrel of a Gunboat: The U.S. in Sino-Soviet Crises," 136 pp., Dec 1982
- PP 379
Jondrow, James M.; Chase, David E.; and Gamble, Christopher L., "The Price Differential Between Domestic and Imported Steel," 17 pp., May 1983
- PP 380
Bells, Ellen, "Balancing Accession and Retention: Cost and Productivity Tradeoffs," 38 pp., Mar 1983
- PP 381
Reeves, John M. L., "CNA's Conceptual Design and Cost Models for High-Speed Surface Craft," 23 pp., Apr 1983, AD A128 245
- PP 382
Levy, Robert A., and Jondrow, James M., "The Adjustment of Employment to Technical Change in the Steel and Auto Industries," 40 pp., May 1983
- PP 383 (Revised)
Thomas, James A., Jr., and Mangel, Marc, "Properties of Quick Look Passive Localization," 39 pp., Jul 1983
- PP 384
Goldberg, Matthew S., and Hager, Michael F., "A Comparison of the Prophet and ACOL Force Projection Models," 35 pp., Jun 1981
- PP 385
Angler, Bruce; Driscoll, Kurt; and Gregory, David, "Manpower Requirements Derivation for the Navy Comprehensive Compensation and Supply Study," 22 pp., Sep 1982
- PP 386
Angler, Bruce N.; Driscoll, Kurt A.; and Carpenter, Kathy A., "Construction of 'Training Cost Per Graduate' for the Navy Comprehensive Compensation and Supply Study," 67 pp., Nov 1982
- PP 387
Bells, Ellen, and Clay-Mendez, Deborah, "Balancing Accession and Retention: The Aggregate Model," 20 pp., Jul 1982
- PP 388
Clay-Mendez, Deborah, "Models of Accession and Retention," 11 pp., Oct 1982
- PP 389
Clay-Mendez, Deborah, "A Minimum Recruiting Cost Function for Male High School Graduates," 31 pp., Jan 1982
- PP 390
Clay-Mendez, Deborah, "Documentation for the Recruiting Cost Estimates Utilized in the Navy Comprehensive Compensation and Supply Study," 30 pp., Sep 1982
- PP 391
Goldberg, Larry, "Summary of Navy Enlisted Supply Study," 11 pp., Jul 1981
- PP 392
Werner, John T., and Simon, Bruce, "An Empirical Analysis of Pay and Navy Enlisted Retention in the AVF: Preliminary Results," 31 pp., Dec 1979
- PP 394
McGibney, Donald; Camerini, Ugo; Roberts, Arthur; and Winston, Roland, "Development of an Underwater High Sensitivity Cherenkov Detector: Sea Urchin," 20 pp., Aug 1983
- PP 396
Jondrow, James M.; Brachling, Frank; and Marcus, Alan; "Older Workers in the Market for Part-Time Employment," 34 pp., Aug 1983
- PP 398
Levy, Robert A.; Bowes, Marianne; and Jondrow, James M.; "Technical Change and Employment in the Steel, Auto, Aluminum, Coal, and Iron Ore Industries," 25 pp., Sep 1983
- PP 400
Laird, Robbin F., "French Nuclear Forces in the 1980s and 1990s," 37 pp., Aug 1983
- PP 401
Maloney, Arthur P., "The Berlin-Baghdad Railway as a Cause of World War I," 27 pp., Jan 1984

END

FILMED

384

DTIC